

REMARKS/ARGUMENTS

In view of the foregoing amendments and following remarks, favorable reconsideration of the pending claims is respectfully requested.

Status of the Claims

Claims 1-9 and 11-14 are pending. By way of this amendment Claim 13 is cancelled.

Objections to the Drawings

The Examiner has objected to the drawings as assertedly failing to show the details of the composition layers and sheets. It appears that the Examiner is troubled by the highly schematic nature of the drawings. As explained in section 608.02 of the MPEP, a drawing needs to be provided when it is necessary for the understanding of the invention or the subject matter admits of illustration. In the present case, the claims are primarily directed to a chemical composition of the polyolefin materials rather than the structure of the nonwoven. As such, drawings are not necessary for an understanding of the invention, and details of the composition layers and sheets is also not necessary. Applicant respectfully submits that it is not necessary to submit new drawings and respectfully request reconsideration and withdrawal of this objection.

Prior Art Rejections

Claims 1-9 and 11-14 stand rejected under 35 U.S.C. §103(a) as being obvious from Dzen et al., U.S. Patent No. 6,008,145 in view of Kinn, et al., U.S. Publication No. 2001/0008965.

In the rejection, the Examiner asserts the Dzen teaches hydrophilic polyolefin material made from a mixture of at least one polyolefin and at least one additive containing a fatty acid having a chain length from 8 to 18 carbon atoms. The Examiner admits the Dzen fails to teach a fatty acid ester as a melt additive or an additive having a carbon length from 23 to 35 carbons atoms. To make up for this deficiency the Examiner first states that 18 carbon atoms is structurally similar to 23 carbon atoms as recited in Claim 1. The Examiner has cited Kinn, for allegedly teaching melt additives that are monomer and dimer fatty acids having a carbon chain length in the range of 6 to 50.

The Applicant respectfully disagrees with the Examiner and submits that Dzen cannot be modified or combined with Kinn to arrive at the claimed invention. In the rejection, it is pointed out that in Dzen fatty acid esters of the same formula as in the present patent application are

taught. The only difference being the length of the alkyl chain. The Examiner then states that structurally similar compounds are generally expected to have similar properties. While such a generalization may be true with respect to some properties, such as the effect of hydrophilicity, it is not true with respect to other properties. In particular, the rejection appears to overlook or not appreciate the that the technology of the present invention is significantly different to the technology and teachings disclosed in Dzen. In particular, Dzen is directed to a finishing compositions containing fatty esters and other finishing additives that are provided as a dispersion or emulsion.

According to the teachings of Dzen, the small chain (e.g., up to 18 carbons) length of the fatty acid is vitally important. The fatty acid ester in Dzen is applied from an aqueous dispersion, and thus has to have a certain dispersability in water. It is common general knowledge that the dispersability of a polar substance in water decreases with an increase of the length of a hydrophobic alkyl chain. Accordingly, when the chain length of the fatty acid molecule is increased, the molecule becomes less hydrophilic. For example, the following sequence illustrates the change in solubility as the carbon chain length increases: methanol-ethanol-propanol > butanol-pentanol > hexanol... etc. Decanol or even higher alcohols are completely insoluble in water although all are "structurally similar compounds".

In Dzen, the carbon chain length was necessarily restricted to C8-C18, otherwise an insufficient or even no dispersion in water would be obtained. In this aspect, Dzen does not "fail" to disclose the fatty acid ester as melt additive, because these substances are not suitable as melt additives.

In sharp contrast to the teachings of Dzen, in the claimed invention the selected fatty acid ester is used as a melt additive, which is incorporated into the polymer matrix by extrusion. Polypropylene is a completely unpolar environment and, for simple compatibility reasons, the alkyl chain in the fatty acid ester preferably must be longer than in the case of an aqueous dispersion, such as that described in Dzen. This is necessary to achieve a sufficient compatibility to the molten polypropylene, and C23-C35 are chosen for this reason.

These differences in alkyl chain length in Dzen and in the present invention define different properties: a shorter chain renders the molecule dispersible in water, a longer chain renders it "dispersible" in polypropylene. The molecule with the shorter chain retains a certain

water solubility and, in case of a hydrophilating agent, can be easily removed from the fiber surface. The molecule with the longer chain slowly migrates through the polymer matrix to the fiber surface and sticks there faster than a shorter chain molecule.

This also defines different properties: the short chain molecule offers an immediately active high hydrophilicity, but no permanency, as the molecule can easily be removed from the fiber surface. Moreover, the usually applied amount generally lies in the range between 0,4 - 0,6%. Lower amounts do not create the desired hydrophilicity. The long chain molecule embedded into the polymer matrix needs to migrate to the fiber surface to develop hydrophilicity. This can take up to several days, depending on temperature and chain length(!). However, the achieved hydrophilicity is "permanent" as the molecule is more difficult to be removed from the fiber surface due to its lower solubility. The degree of hydrophilicity usually is lower than in the case of a "topical treatment" and depends on the migration speed.

Further, Dzen cannot be modified with the teachings of Kinn as suggested by the Examiner. Quite to the contrary, if Dzen were modified as suggested by the Examiner to include fatty acids having a carbon length of 23 carbon atoms or greater, the composition of Dzen would be unsatisfactory for its intended purpose. That is, one could not obtain a dispersion or emulsion that is suitable as a finishing as described in Dzen. As such, there can be no expectation that the fatty acids of Kinn can be combined with the teachings of Dzen to provide a predicable, let alone successful result.

In addition, the present invention provides surprising results. The Examiner's proposed modification would result in the following sequence of processing steps: a hydrophilic melt additive is used, this is dispersed in a polypropylene matrix, the resulting fiber will be transformed into a web, and finally this will be treated topically using conventional concentration of a selected topical agent. However, one of ordinary skill in the art would expect that such a treated nonwoven shows a high hydrophilicity in the beginning, which quickly is reduced because the topical tensides are washed off, and the hydrophilicity early ends up at the low level the melt additive creates. One of ordinary skill in the art would not expect the permanent hydrophilic properties provided by the present invention. (compare section [0075] of US-A-2007/0167549).

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Accordingly, it is surprising to find that a tenside concentration down to 0.01% created a degree of hydrophilicity that is more than unexpected for that low amount. In addition, the hydrophilicity maintains a very high level for an unexpectedly long time. These two main observations seem to indicate a kind of "activation" of the melt additive by the tenside, which can not be deduced from the state of the art. For this additional reason, it is respectfully submitted that the claimed invention is patentable over the cited art.

In view of the foregoing amendments and remarks, it is respectfully submitted that the rejections under 35 U.S.C. § 103(a) have been overcome.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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